AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Previously Presented) A method of manufacturing a steel wire having a diameter ranging from 0.10mm to 0.40mm obtained by subjecting a high-carbon steel wire material having a carbon content ranging from 0.70% to 0.90% in weight to heat treatment and wire drawing, characterized in;

that tensile strength TS (N/mm^2) of the steel wire satisfies following formula,

$TS \geq 2250-1450\log D$

wherein D is the diameter of the steel wire in mm and log means common logarithm,

and that repeated torsion value RT (turns/100D) of the steel wire, which is defined as sum of forward twisting and reverse twisting given until a crack is formed on a steel wire in a test wherein a steel wire is subjected to a repetition of forward twisting equivalent to 3 turns per 100D and reverse twisting to the original state with the axis of the steel wire kept straight, satisfies following formula,

$$\log RT \geq 2\text{-}0.001\ \{TS\text{-}(2250\text{-}1450\log D)\}$$

which comprises a step of drawing a high-carbon steel wire material after heat treatment, characterized in that the step of drawing is carried out according to following conditions;

① reduction per die is set from $(22.67\ \varepsilon+3)\%$ to 29% for dies at which ε is less than 0.75,

② reduction per die is set from 20% to 29% for dies at which ε is not less than 0.75 and not more than 2.25,

③ reduction per die is set from $(-5.56\ \varepsilon+32.5)\%$ to $(-6.22\ \varepsilon+43)\%$ for dies at which ε is more than 2.25 except for the final die,

④ reduction per die is set from 4% to $(-8.3\ \varepsilon+40.6)\%$ for the final die, and

⑤ ε at the final die is set from 3.0 to 4.3,

wherein ε is drawing strain expressed by a formula $\varepsilon = 2\ln(d_0/d)$, d_0 is diameter of the steel wire material in mm before drawing, d is diameter of the steel wire in mm after passing through a die, and ln means natural logarithm.

6. (Previously Presented) A method of manufacturing a steel wire according to claim 8, wherein ε at the final die is set from 3.5 to 4.2.

7. (Previously Presented) A method of manufacturing a steel wire according to claim 8, wherein a bending operation with tension is applied to the steel wire drawn through the final die.

8. (Previously Presented) A method of manufacturing a steel wire comprising; a wire diameter ranging from 0.10mm to 0.40mm obtained by subjecting a high-carbon steel wire material having a carbon content ranging from 0.70% to 0.90% in weight to heat treatment and wire drawing, characterized in;

a tensile strength TS (N/mm^2) of the steel wire satisfies following formula,

$TS \geq 2250-1450\log D$

wherein D is the diameter of the steel wire in mm and log means common logarithm,

and that repeated torsion value RT (turns/100D) of the steel wire, which is defined as sum of forward twisting and reverse twisting given until a crack is formed on a steel wire in a test wherein a steel wire is subjected to a repetition of forward twisting equivalent to 3 turns per 100D and reverse twisting to the original state with the axis of the steel wire kept straight, satisfies following formula$\log RT \geq 2-0.001\{TS-(2250-1450\log D)\}$,

said method comprising the steps of heat treating drawing a high-carbon steel wire material after heat treatment, wherein the step of drawing is carried out according to following conditions;

1. reduction per die is set from (22.67 ε +3)% to 29% for dies at which ε is less than 0.75,

2. reduction per die is set from 20% to 29% for dies at which ε is not less than 0.75 and not more than 2.25,

3. reduction per dies is set from (-5.56 ε +32.5)% to (-6.22 ε +43)% for dies at which ε is more than 2.25 except for the final die,

4. reduction per die is set from 4% to (8.3 ε +40.6)% for the final die, and

5. ε at the final die is set from 3.0 to 4.3,

wherein ε is drawing strain expressed by a formula $\varepsilon = 2\ln(d_0/d)$, d_0 is diameter of the steel wire material in mm before drawing, d is diameter of the steel wire in mm after passing through a die, and ln means natural logarithm.

9. (Previously Presented) A steel wire comprising wire diameter ranging from 0.10mm to 0.40mm obtained by subjecting a high-carbon steel wire material having a carbon content ranging from 0.70% to 0.90% in weight to heat treatment and wire drawing,

the steel wire manufactured by drawing a high-carbon steel wire material after heat treatment, wherein the drawing is carried out according to following condition;

1. reduction per die is set from (22.67 ε +3)% to 29% for dies at which ε is less than 0.75,

2. reduction per die is set from 20% to 29% for dies at which ε is not less than 0.75 and not more than 2.25,

3. reduction per dies is set from (-5.56 ε +32.5)% to (-6.22 ε +43)% for dies at which ε is more than 2.25 except for the final die,

4. reduction per die is set from 4% to (8.3 ε +40.6)% for the final die, and

5. ε at the final die is set from 3.0 to 4.3,

wherein ε is drawing strain expressed by a formula $\varepsilon = 2\ln(d_0/d)$, d_0 is diameter of the steel wire material in mm before drawing, d is diameter of the steel wire in mm after passing through a die, and 1n means natural logarithm and the tensile strength TS (N/mm^2) of the steel wire satisfies following formula,

$TS \geq 2250 - 1450 \log D$

wherein D is the diameter of the steel wire in mm and log means common logarithm,

and that repeated torsion value RT (turns/100D) of the steel wire, which is defined as sum of forward twisting and reverse twisting given until a crack is formed on a steel wire in a test wherein a steel wire is subjected to a repetition of forward twisting equivalent to 3 turns per 100D and reverse twisting to the original state with the axis of the steel wire kept straight, satisfies following formula,

$\log RT \geq 2 - 0.001 \{TS - (2250 - 1450 \log D)\}$

10. (Previously Presented) A steel wire according to claim 9, having tensile strength TS (N/mm^2) satisfying following formula.

$TS \geq 2750 - 1450 \log D$.

11. (Previously Presented) A steel wire according to claim 10, having repeated torsion value RT not less than 60% of RT of the same steel wire the surface layer of which has been removed by the amount equivalent to 10% of total volume.

12. (Previously Presented) A steel wire according to claim 9, having breaking torsion value, which is defined as an amount of twisting to one direction subjected to a steel wire until the steel wire is broken, not less than 20 turns per 100D when the steel wire has been given such a preforming that the steel wire has minimum radius of curvature of 10 to 60 times its diameter and embedded in rubber and taken out from the rubber after vulcanization.